USER MANUAL

MAX XG horizontal axis type wind turbine

Content

I. SUMMARIZE

II.TECHNICAL PARAMETER

III. STRUCTURE & COMPONENTS

IV. PACKING LIST

V. CHOOSE INSTALLATION SITE

VI. FUNDATION INSTRUCTION

VII. INSTALLATION INSTRUCTION

VIII. MATTERS NEEDING ATTENTION

VIIII. MAINTENANCE

VV.WARRANTY

PREFACE

THE WIND SYSTEM MENTIONED IN THE MANUAL ARE MAX XG SERIES SMALL WIND TURBINE.

THANK YOU FOR PURCHASING MAX XG SERIES SMALL WIND TURBINE SYSTEM, IN ORDER TO ENSURE THE PRODUCT OPERATING SAFELY AND EFFICIENTLY,

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE THE SYSTEM.

MAY YOU HAVE A GOOD TIME WITH OUR PRODUCTS!

I. SUMMARIZE

MAX Nature Green Energy Limited located on beautiful shore of Yellow Sea, Shandong Province, is a high-tech enterprise that compositing R&D, production and marketing in one. We are engaged in exploit of wind and solar such renewable energy. We can offer the user with high quality, reliable and energy-efficient power supply project. Our company own advanced equipments, patent protected technology and top ranking talents. The products are reasonable designed with stable quality; our factory has passed ISO9001 international quality management system certification.

The company independently developed more than twenty different models like off-grid and on-grid types, horizontal and vertical types.

Horizontal axis wind turbine :(XG Series)

200w/300w/400w/500w/600w (rotary type and automatically yaw type)

1kw/2kw

3kw/5kw/10kw (automatically yaw type and electronic control Variable Pitch type)

15kw/20kw/30kw/50kw (electronic control Variable Pitch type)

Electronic control Variable Pitch type is original creation of our company; adopt electronic control marching type blades, with goods stability and security.

Vertical axis wind turbine: (XG-H Series)

300w/500w/1000w/2000w/3000w/5000w, all direct drive types, after testing and updating more than one year, the products are superior to like products, can be used as scenery and generate electricity.

All generators are self research and developed, enclosures are made from seamless steel tube, with characters of small volume, high accuracy, low weight, elegant appearance.

Stators adopt special magnetic circuit design, to reduce the torque of generator effectively. The rotors are made from neodymium iron boron, to make the wind turbines superior to like products.

The blades are streamlining designed, with good pneumatic character. Using high quality glass fiber reinforced plastic, demanding small wind to start and can survive in big wind.

The inverters adopt chip control, pulse width modulation, to achieve regulator output and automatically protection.

II. TECHNICAL PARAMETER (*Adjustable on demand*)

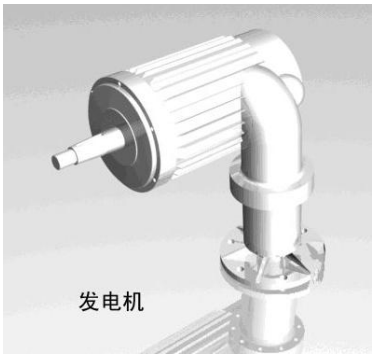
Item	300W	400W	500W	600W	1KW	2KW	3KW	5KW
blade diameter	2m	2.3m	2.5m		2.8m	3.8m	4.5m	5.5
material of the blades	Fiberglass-Reinforced Plastic							
rated rotor speed	400 r/min				360 r/min	320 r/min	240 r/min	220 r/min
rated speed	8m/s						9 m/s	
rated Power	300W	400w	500w	600w	1000w	2000w	3000w	5000w

max Power	400W	500w	720w	1200w	2500w	3600w	6500w
n/m(Max start torsional moment n/m)	<0.2	<0.2	<0.3	<0.4	<0.8	<1.0	<1.2
output voltage	24V			48v	72v	120v	196v
start up wind speed	2.5(m/s)					3(m/s)	
work speed	3-25(m/s)						
security wind speed	50(m/s)						
height of guy cable tower	6(m)					9(m)	
generator style	3-phase AC PM						
top quality except tower	28kg	35kg	44kg	52kg	90	140	180
Suggest batteries	2pcs 12v150ah			4pcs 12v150ah	6pcs 12v200ah	10pcs 12v200ah	16pcs 12v200ah
Service life	>15 years						
output controller system	Wind solar hybrid controller，Off--grid inverter						
Mated solar panel	24v 100w	24v100 w--150w	24v100w--200w	48v200w--400w	72v600w--800w	120v600w--1300w	192v1000w-2400w
Class of insulation	B						
Material of enclosure	Fine cast steel						
Material of magnet steel	N38SH neodymium-iron-boron 38sh						
Material of stator	QZY-2/180/470						
Corrosion prevention	Zinc coated、 painting						
Blades material	3 FRP blades						
Over speed protection	The wind pressure makes the rear wing's axis rotation, Yaw automatically, electromagnetism protection						

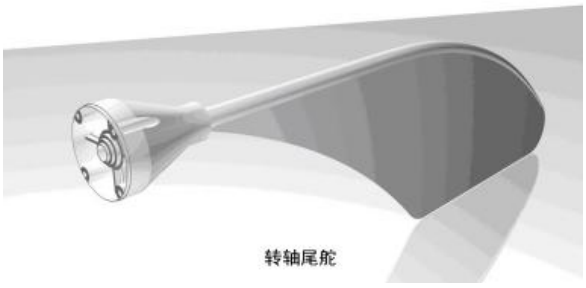
III. STRUCTURE & COMPONENTS

Main parts: blades, generator, tail rod, tower, electrical system.

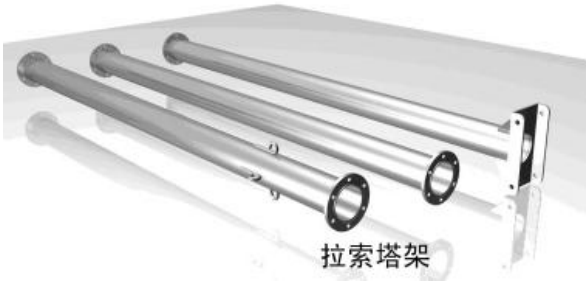
Electrical system include: electric control box, batteries, wire, and cable. (See figure)



Generator

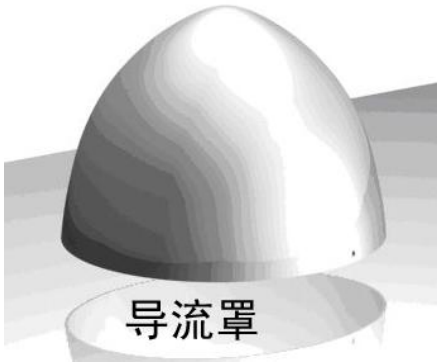


tail



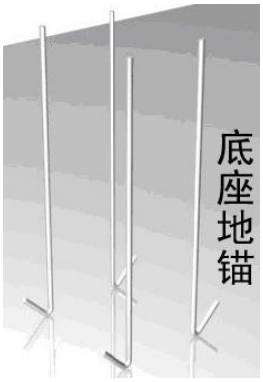
Guyed pole

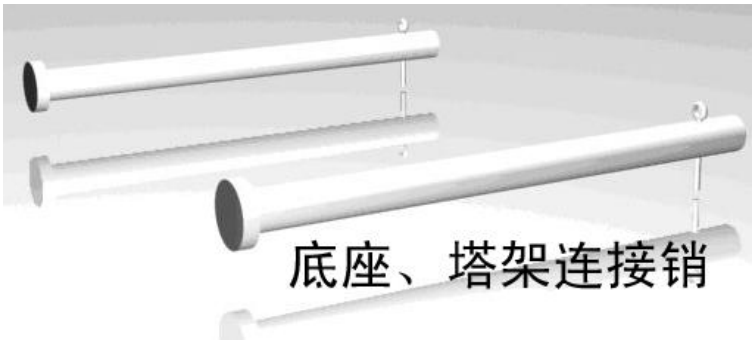
blades



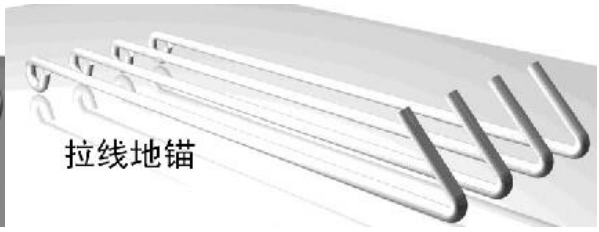
Cover

base

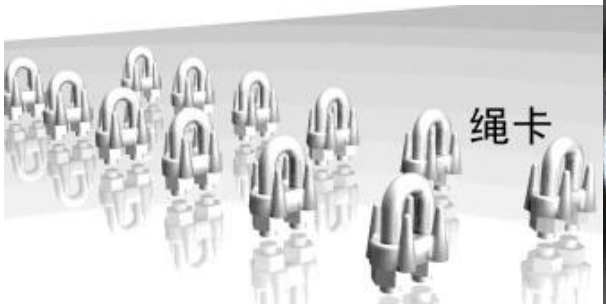




Anchors for base pins for base and pole



Wire grip anchors for wire



Rope clip wire

Controller **inverter**

IV. PACKING LIST

Please check the packing list for its completeness before installation.

ITEM	QUANTITY
Generator assembly	1
Wheel Hub	1
Base	1
Blades	3
Tail	1
Cover	1
Wire	6m pole30m，9mpole40m
Anchors of Base	4 or 2
Anchors of Wire	4
Charger controller	1
inverter	1
Pole	300w-2kw 6m/3kw-5kw 9m
Wire grip	4
Instruction manual	1
Screw	1set

V. CHOOSE INSTALLATION SITE

Installation site is very important for the safe and efficient operation of the wind system. The following statement is as reference.

1). the higher of average wind speed the more power that the wind system will generate.

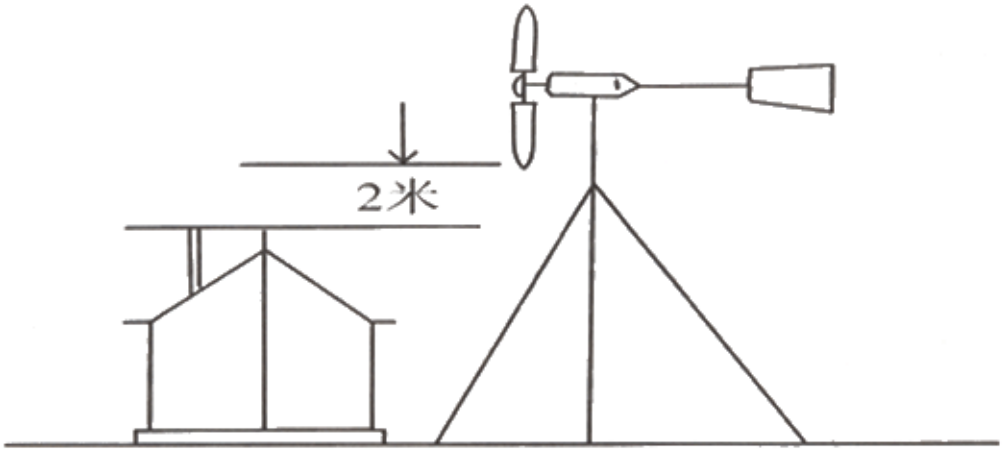
(The power of wind is in proportion to the cube of wind speed. e.g. the wind power on 5m/s wind speed is twice as the power on 4m/s wind speed)

2). Unstable wind is not good for the safe operation of wind generator, and will reduce power that generated by the system. Heavy turbulence site is inadvisable to install the system.

The higher the wind generator is placed, the stronger winds it will experience in flat area the suggest height of tower do not lower than 6m.

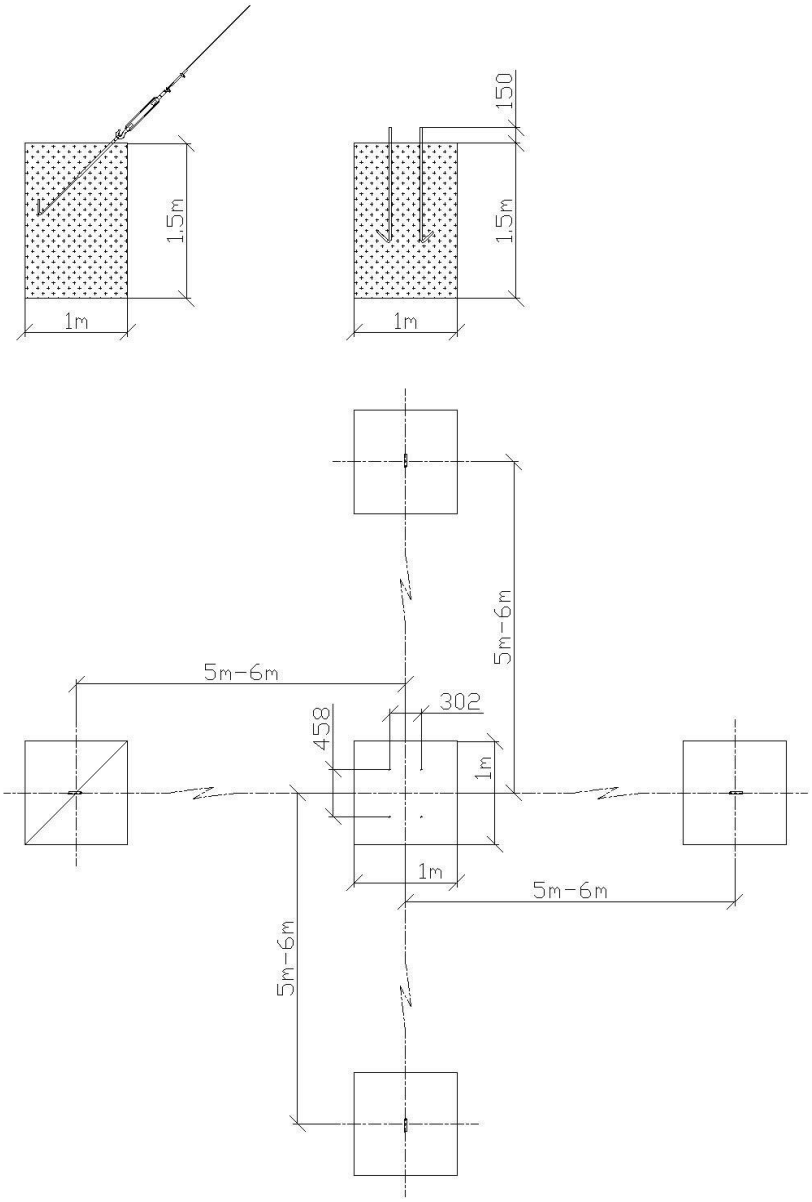
The airflow around threes and building will form turbulence area, Avoid trees and buildings that will shadow the wind generator.

If the wind power generator has to be placed besides the obstacle, chose the site as far away as possible in order to make full use of wind .(see figure)

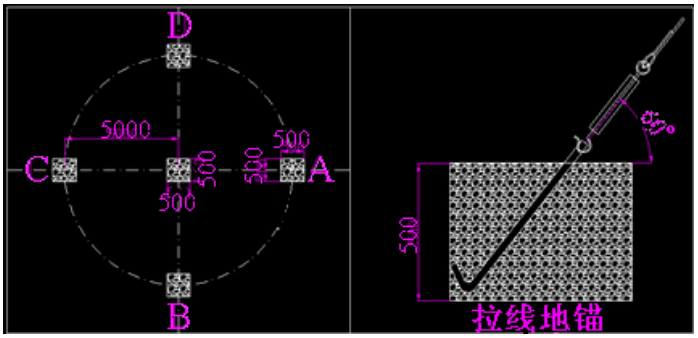

2米

H
L=15~20H

VI. FUNDATION INSTRUCTION



3kw-5kw FUNDATION



300w-1kw FUNDATION

1). Dig a squarish pit on center of ground. 500mm x 500mm x 500mm (300w-1kw)
1000mm x 1000mm x 1000mm (2kw)
1000mm x 1000mm x 1500mm (3kw-5kw)

Above 10KW supply drawing separately

2). Take the squarish pit as the centre; equally dig 4 pits (A B C D) at radius of 5.0m. (Design the distance between anchor of wire and the center according to the height of tower. For 9m height tower, the distance is 5-7m)

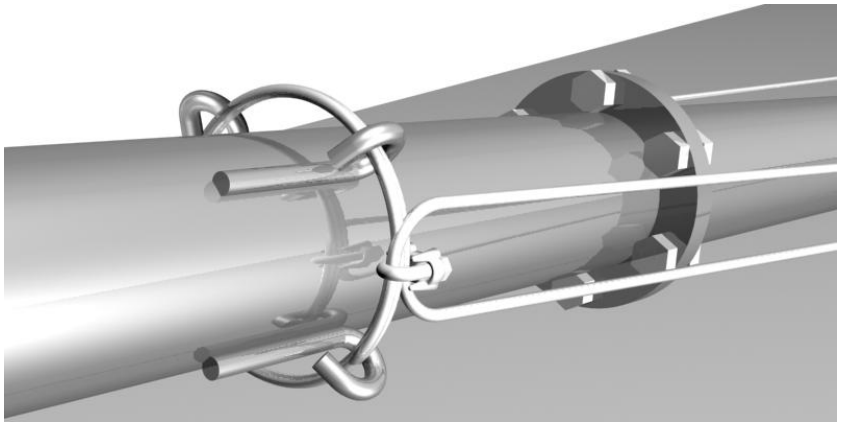
3). Put the four anchors into the holes of base and tight with screw. (keep the top of screw 20mm above the base). Make the axis of base be directed by pits B D (or A C) and lay flat 40-50mm above the ground. Pour concrete (the proportion of cement, sand, gravel is 1:2:3). adjust the base flat at last.

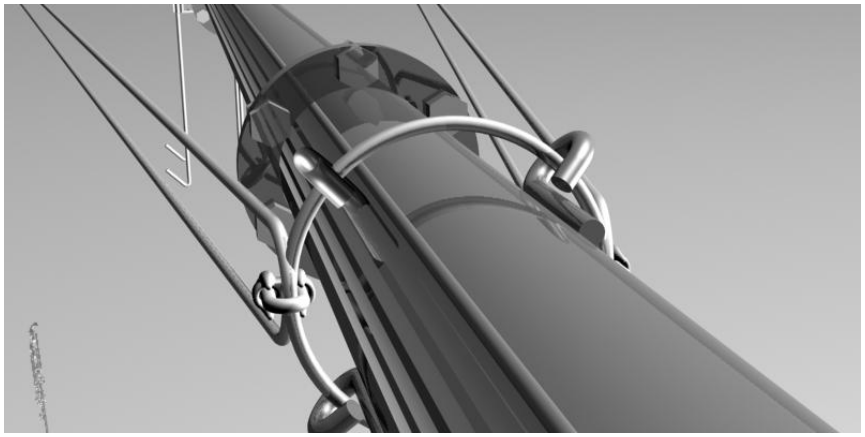
4). Put the anchor of wire slant into the pits, throw stone to the bottom to cover the anchor, then pour concrete, stone and concrete interlace till the pits full. Keep the circular ring lean to the center of ground, form 60 °angle with horizontal.

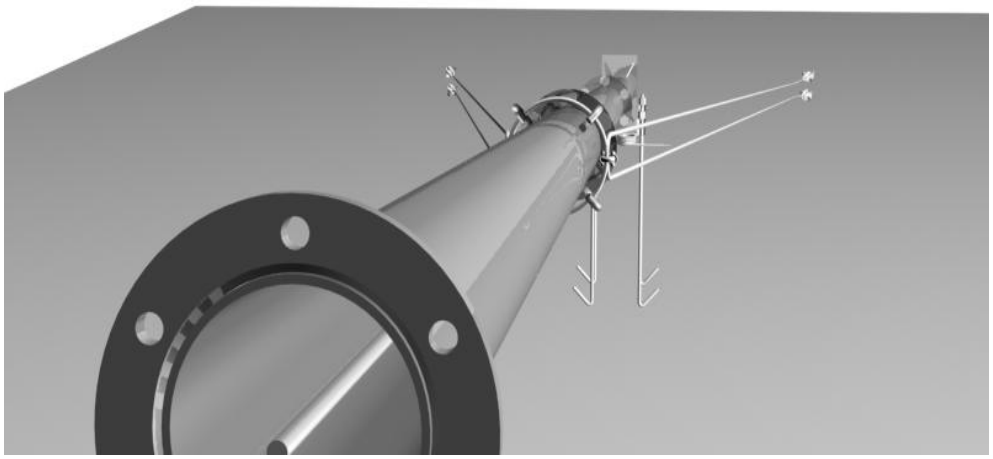
VII. INSTALLATION INSTRUCTION

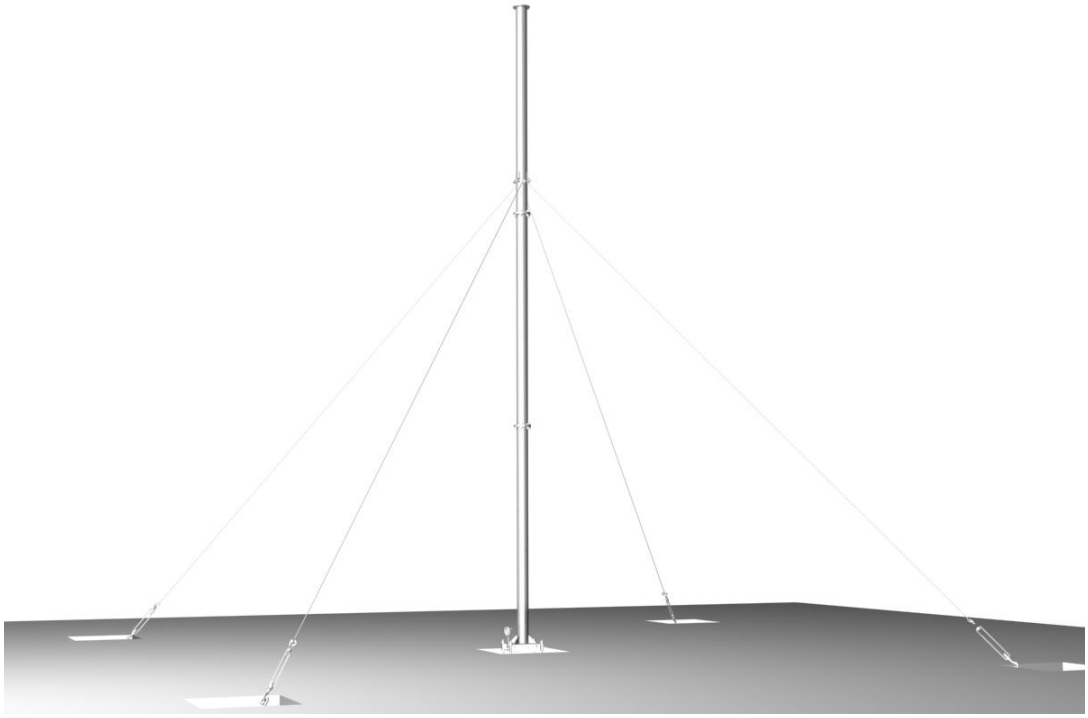
1). Please install the system when the wind speed is less than 2m/s.

2).Keep the base on bottom of tower flat, put washer on the screw of anchor, tight the nut. Put cable through the tower; connect the two sections of tower and the base. Lay on pit A. (see figure)

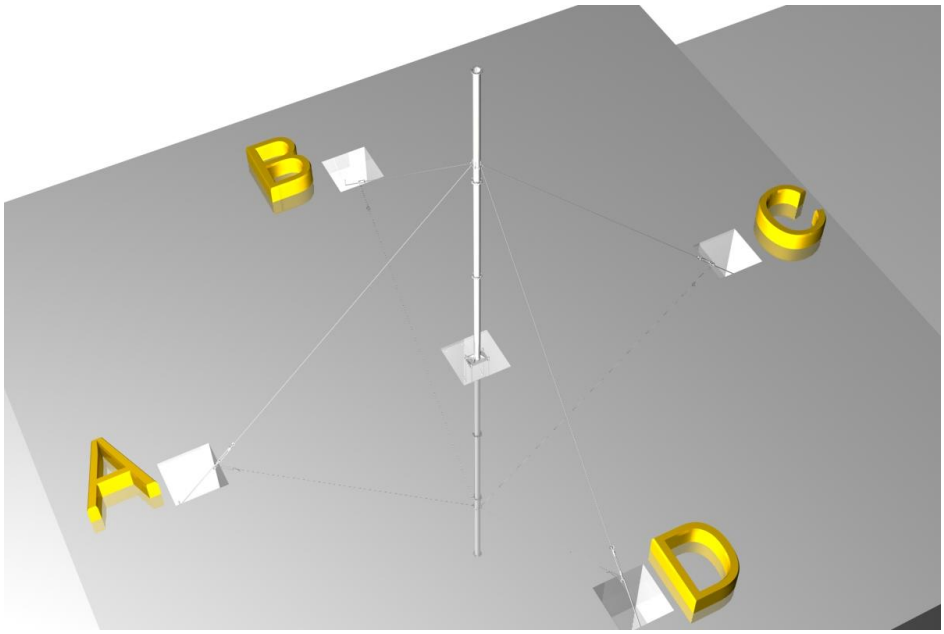


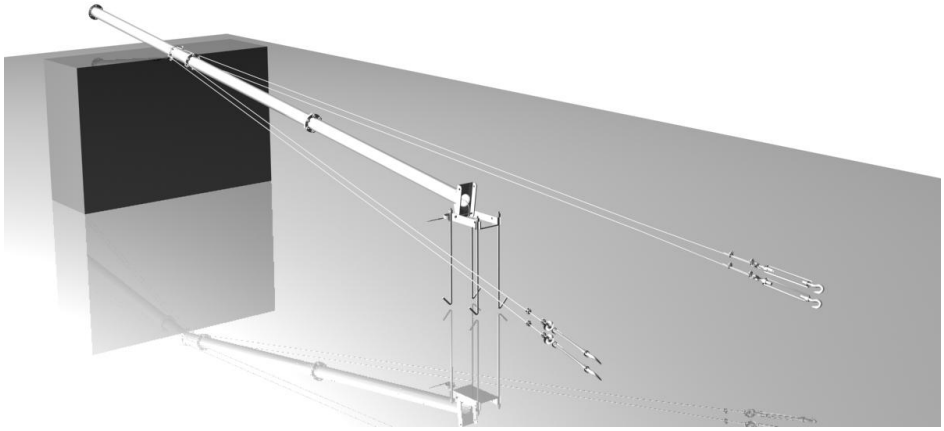






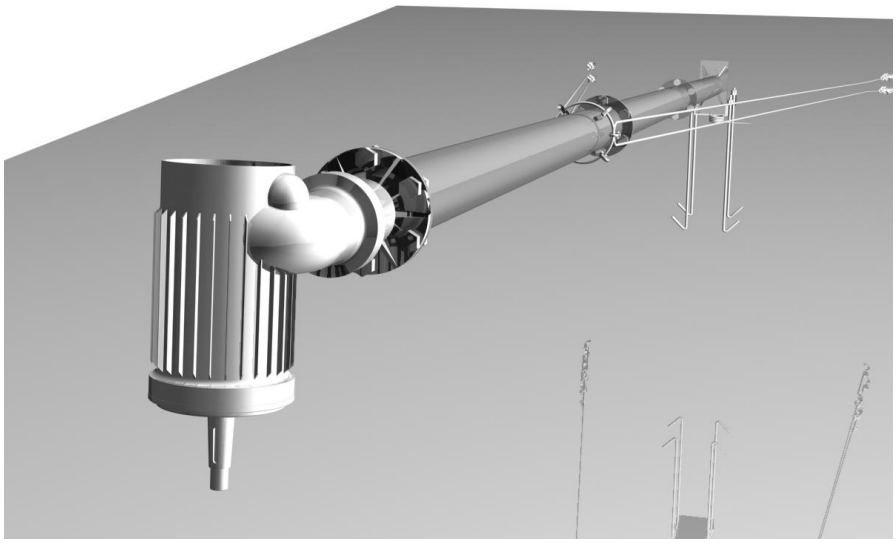
3).Reeve the wire thimble from top to raised face, make a circle around pole and through out (see fig), adjust the length of wire and tight with clip. Loose wire grip, pull up the pole; adjust the wire grid to keep the pole vertical. (Note: the wire is not allowed to be tied by the wire thimble directly, in case cause fall down)





4). Lay a 1m holder around pit A, extend the wire grid for pits B, D properly(50mm),lay down the pole slowly, support the pole with holder on the link point.

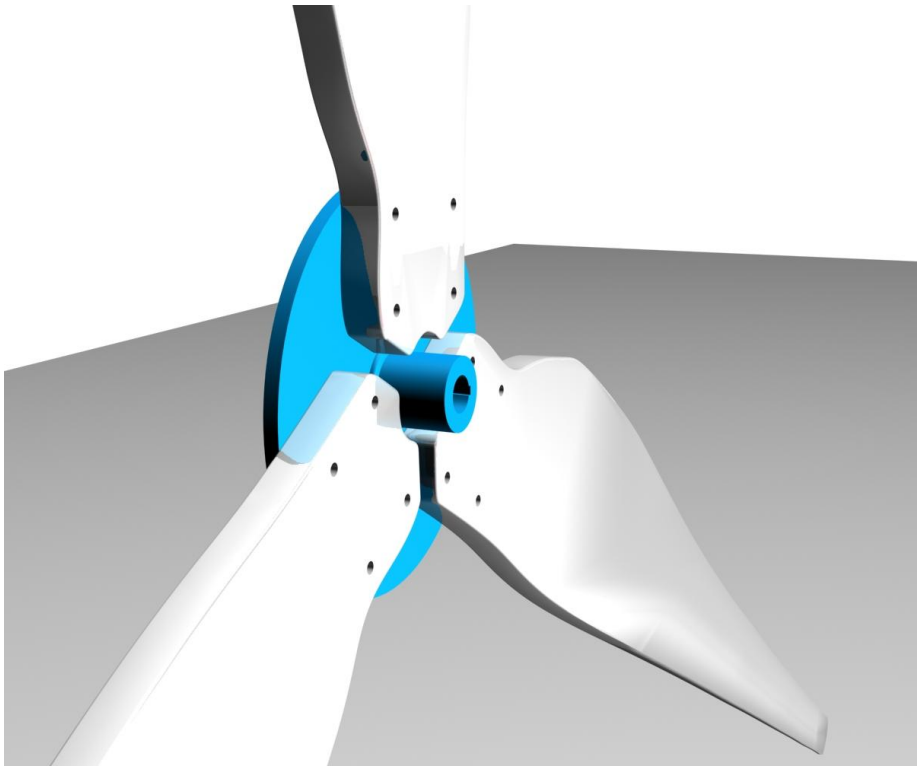
5). Assemble wind turbine:

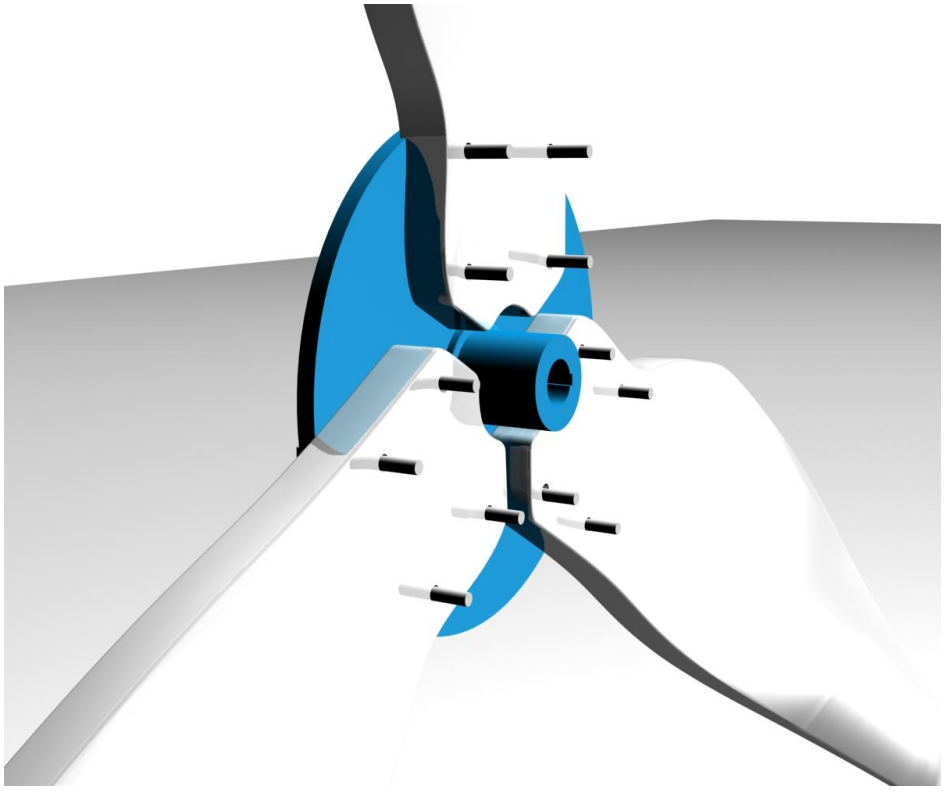


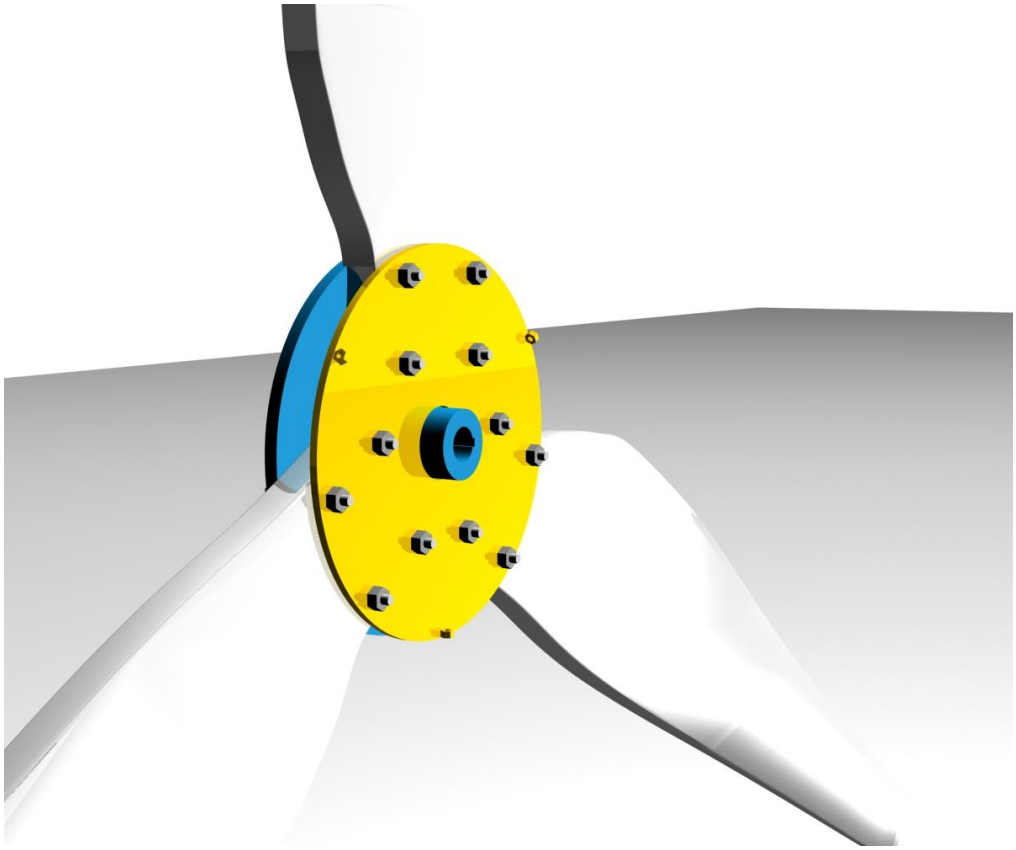
A) Peg graft the generator shaft to pole (or connect with flange), and screw fixed bolt

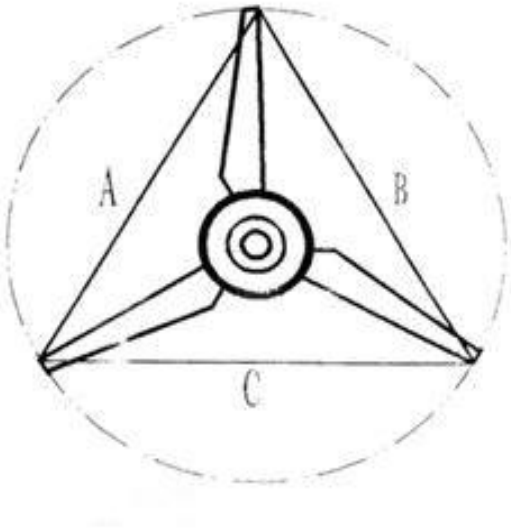
.

B) Fix the tail with four screws on back of generator. Keep the tail rotate freely.







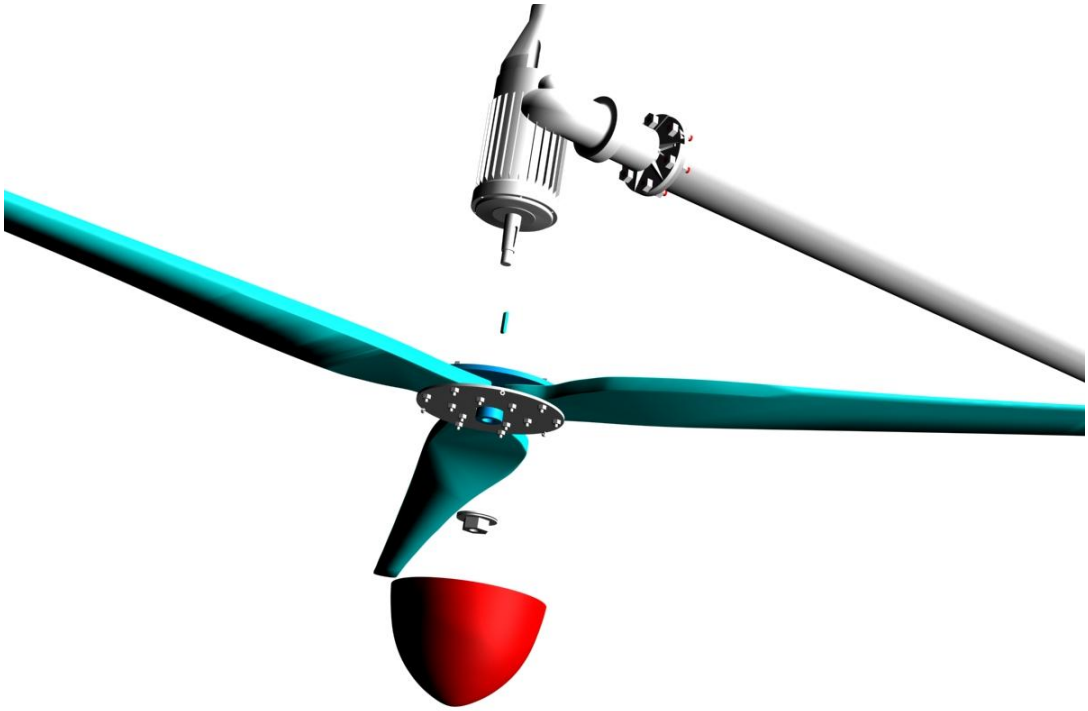


Note:

Please pay attention keep A, B, C in same distance.

The error <10mm.

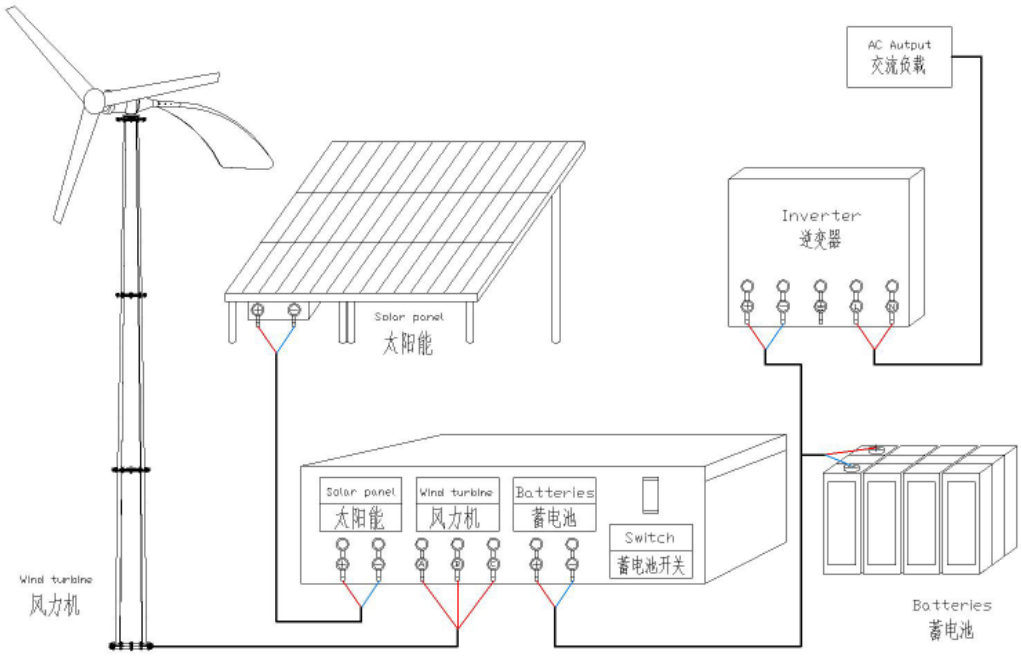
You can adjust the distance before fix the screws.



C) Assemble blades hub, the concave side of blades face wind, convex side face generator, mustn't be reversed, place blades assembly into generator shaft, put washer and screw bolt. Run blades to make sure the shaft and hub working well, fix the cover afterwards.

When install the generator on the pole, the three down leads must be short circuit, screw the line together, in case of run away.

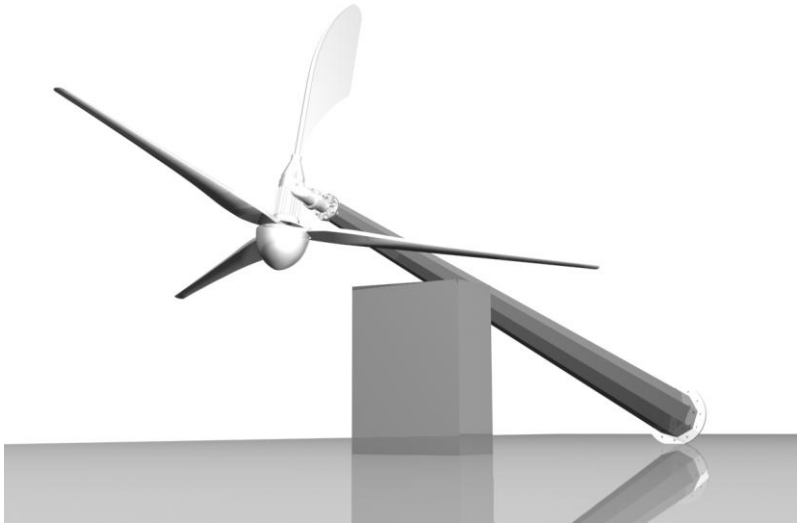
Instruction for control system



D) The red terminal of electrical box should be connected with“＋”pole of battery. the black terminal should be connected with “—”pole of battery mustn’t be reversed.
(Note: The voltage of battery should agree with the voltage of inverter and generator; the terminal should be connected firmly; to prevent corrosion, the terminal can be coated with oil or Vaseline)

E) Inspect the connection of each part completely to ensure safe, pull up the wind system.
(Connect the three downlead before pull up)

F) Installation for free standing pole:



Crane has to be used in installation of free standing pole.
Its foundation design and construction drawings are available to be supplied separately.

VIII. MATTERS NEEDING ATTENTION

1). When the generator jitters and makes abnormal noise, it should be stopped and examined carefully.
2). When the blades running in high speed, do not stand people or carry on other work in the plane direction of working blades, in case the blades fly off.
3). The battery must maintain dry and clean all the time. Do not lay metal on top of batteries to avoid short-circuit.
4).The negative earth of the electric control box and the inverter can not be put in the same place to avoid short circuit. To operate inverter should follow the instruction.
5).The wire grip may loose in strong wind. Fasten it with iron wire if it is loose. Inspect the wires after suffering strong winds. (The upper pole must be vertical)
6).The lines of wind power system can not be mixed with other lines. It should be arranged separately. Suggest the lighting use DC power and household appliances use AC power. (The inverter and its output line can not be parallel connected; also the inverter output line can not be connected to the commercial power)
7).When connecting electrical box, connect the battery first, then to the generator output line. The sequence of its decomposition exactly is opposite.
8).Shutdown switch for electrical box is usually on open position. It is used when the capacity of the battery is adequate or to defend strong storm disasters. Only when the blades rotate slowly you can button the shutdown switch. Do not press the button when the blades rotate in high speed. No-load operation is forbidden, in order to secure the blade in high speed.

VIIII. MAINTENANCE

MAX XG series small wind turbine system is reliable and do not need frequent maintenance. The user need inspect the generator –pole -output line timely to ensure the system operating safely.

1). Inspect the wire grip, fixed in time if loosen. During the first three month, this inspection is required, also after suffering strong wind.
2). Inspect if the joint of circuit is fixed, if there is Corrosion phenomenon.
3). Inspect batteries timely according to its demand.
4). Before coming of extreme weather (like typhoon), we suggest lay down the pole to avoid unpredictable accident.

TROUBLE SHOOTING

MAX XG series small wind turbine system is designed according to principle of free-maintenance. Normally reasonable installation and use will not cause fault. Please refer to the following table when accidental fault occur.

Fault	Reason	Maintenance Method
Shake from generator	1. wire loosen 2. screw of blades loosen 3. blades damaged in outer force 4. the surface of blades freeze, cause lose balance	1. tense the wire 2. screw the loosen parts 3. replace blades 4. clean up the freeze
Unmoral noise	1. the parts loosen 2. bearing of generator has been damaged 3. there is rub between blades and other parts	1. lay down the system, check loosen parts, take sanforizing measure 2. replace bearing 3. inspect fault of blades
The rotate speed reduced obviously	1. there is rub from stator of generator 2. the winding of generator is short circuit or output line short circuit 3. the button on the controller be placed on off position	1. replace bearing 2. find short circuit parts, and insulate 3. place the button on
The voltage output from generator is low	1. the rotate speed of generator is slow 2. three phase winding of stator short circuit 3. controller short circuit 4. low voltage transmission line is too long, or the diameter of line is thin	1. inspect generator 2.find short circuit parts, and insulate 3. replace controller 4.short the line or widen diameter of the line
Energy output from battery is insufficient	1. output voltage from generator is too low 2. terminal of battery is corroded, cause poor contact 3. the battery lose efficacy	1. inspect the generator 2. clear the terminal, keep contact well and coat oil 3. replace battery

VV.WARRANTY

1).generator, blades, inverter, charge controller, warranty one year.

2).warranty time start from the date of contract.

3).do not responsible in the following condition:

A. install the system ignore the instruction manual, cause damage

B. damage caused by force majeure

C. unreasonable installation cause the system full down

D. privately remodel the system

All final explanation rights to the instruction manual here belong to **MAX Nature Green Energy Limited.** The parameter subject to change without prior notice

MAX Nature Green Energy Limited
Phone 86 536 8396950
Fax 86 536 8396950
Web http://max-nature-energy.com
Email info@max-nature-energy.com
Address 4399Anshun RD. Weifang, Shandong

Explore MAX Power of Nature!